

In the Claims:

Please amend claims 1, 6, 7, 12, 13, 14, 20-25, and 30-31 as indicated below:

1. (Currently amended) A system, comprising:

one or more data storage devices comprising a file system;

one or more data backup devices; and

a two-tier backup mechanism configured to:

determine static data in the file system, wherein static data are data in the file system that have not been modified for a specified period, wherein the static data includes static copied data for which a specified number of copies have been previously backed up to second-tier backup media and candidate static data for which less than a specified number of copies have been previously backed up to the second-tier backup media;

periodically or aperiodically back up the candidate static data from the file system to the second-tier backup media on the data backup devices, ~~wherein the candidate static data are data in the file system that have not been modified for a specified period;~~

periodically or aperiodically back up dynamic data and the candidate static data from the file system to first-tier backup media on the data backup devices, wherein the dynamic data are data in the file system that have been created or modified in the specified period;
and

~~wherein only metadata for static copied data is backed up from the file system to the first tier backup media, wherein the static copied data are static data in the file system for which a specified number of copies have been previously backed up to the second tier backup media.~~

periodically or aperiodically back up only metadata for the static copied data from the file system to the first-tier backup media.

2. (Original) The system as recited in claim 1, wherein the file system does not include infrastructure to support Hierarchical Storage Management (HSM).

3. (Original) The system as recited in claim 1, wherein the file system supports Hierarchical Storage Management (HSM) but HSM is not implemented on the file system.

4. (Original) The system as recited in claim 1, wherein the file system supports Hierarchical Storage Management (HSM) and HSM is implemented on the file system.

5. (Original) The system as recited in claim 1, wherein the two-tier backup mechanism is integrated with Hierarchical Storage Management (HSM) on the file system.

6. (Currently amended) The system as recited in claim 1, further comprising a restore mechanism configured to:

restore the dynamic data, the candidate static data, and the metadata for the static copied data from a first-tier backup to the file system;

make the file system operational after said restore from the first-tier backup; and

schedule one or more background processes to restore one or more portions of the static copied data from the second-tier backup media to the file system;

wherein the one or more background processes are configured to use the restored metadata for the static copied data to locate the static copied data on the second-tier backup media.

7. (Currently amended) A system, comprising:

a processor; and

a memory comprising program instructions, wherein the program instructions are executable by the processor to implement a two-tier backup mechanism configured to:

determine static data in a file system, wherein static data are data in the file system that have not been modified for a specified period, wherein the static data includes static copied data for which a specified number of copies have been previously backed up to second-tier backup media and candidate static data for which less than a specified number of copies have been previously backed up to the second-tier backup media;

periodically or aperiodically back up the candidate static data from a file system to the second-tier backup media, ~~wherein the candidate static data are data that have not been modified for a specified period;~~

periodically or aperiodically back up dynamic data and the candidate static data from the file system to first-tier backup media, wherein the

dynamic data are data that have been created or modified in the specified period; and

~~wherein only metadata for static copied data is backed up from the file system to the first tier backup media, wherein the static copied data are static data for which a specified number of copies have been previously backed up to the second tier backup media.~~

periodically or aperiodically back up only metadata for the static copied data from the file system to the first-tier backup media.

8. (Original) The system as recited in claim 7, wherein the file system does not include infrastructure to support Hierarchical Storage Management (HSM).

9. (Original) The system as recited in claim 7, wherein the file system supports Hierarchical Storage Management (HSM) but HSM is not implemented on the file system.

10. (Original) The system as recited in claim 7, wherein the file system supports Hierarchical Storage Management (HSM) and HSM is implemented on the file system.

11. (Original) The system as recited in claim 7, wherein the two-tier backup mechanism is integrated with Hierarchical Storage Management (HSM) on the file system.

12. (Currently amended) The system as recited in claim 7, wherein the program instructions are executable by the processor to implement a restore mechanism configured to:

restore the dynamic data, the candidate static data, and the metadata for the static copied data from a first-tier backup to the file system;

make the file system operational after said restore from the first-tier backup; and

schedule one or more background processes to restore one or more portions of the static copied data from the second-tier backup media to the file system;

wherein the one or more background processes are configured to use the restored metadata for the static copied data to locate the static copied data on the second-tier backup media.

13. (Currently amended) A system, comprising:

means for determining static data in a file system, wherein static data are data in the file system that have not been modified for a specified period, wherein the static data includes static copied data for which a specified number of copies have been previously backed up to second-tier backup media and candidate static data for which less than a specified number of copies have been previously backed up to the second-tier backup media;

means for periodically or aperiodically backing up the candidate static data from a file system on one or more data storage devices to the second-tier backup media on one or more data backup devices, ~~wherein the candidate static data are data that have not been modified for a specified period;~~

means for periodically or aperiodically backing up dynamic data and the candidate static data from the file system to first-tier backup media on the data backup devices, wherein the dynamic data are data that have been created or modified in the specified period; and

~~wherein only metadata for static copied data is backed up from the file system to the first tier backup media on the data backup devices, wherein the static~~

~~copied data are static data for which a specified number of copies have been previously backed up to the second-tier backup media.~~

means for periodically or aperiodically backing up only metadata for the static copied data from the file system to the first-tier backup media.

14. (Currently amended) A method, comprising:

determining static data in a file system, wherein static data are data in the file system that have not been modified for a specified period, wherein the static data includes static copied data for which a specified number of copies have been previously backed up to second-tier backup media and candidate static data for which less than a specified number of copies have been previously backed up to the second-tier backup media;

periodically or aperiodically backing up the candidate static data from [a] the file system to the second-tier backup media, ~~wherein the candidate static data are data that have not been modified for a specified period;~~

periodically or aperiodically backing up dynamic data and the candidate static data from the file system to first-tier backup media, wherein the dynamic data are data that have been created or modified in the specified period;
and

~~wherein only metadata for static copied data is backed up from the file system to the first tier backup media, wherein the static copied data are static data for which a specified number of copies have been previously backed up to the second-tier backup media.~~

periodically or aperiodically backing up only metadata for the static copied data from the file system to the first-tier backup media.

15. (Original) The method as recited in claim 14, wherein the file system does not include infrastructure to support Hierarchical Storage Management (HSM).

16. (Original) The method as recited in claim 14, wherein the file system supports Hierarchical Storage Management (HSM) but HSM is not implemented on the file system.

17. (Original) The method as recited in claim 14, wherein the file system supports Hierarchical Storage Management (HSM) and HSM is implemented on the file system.

18. (Original) The method as recited in claim 14, wherein the two-tier backup mechanism is integrated with Hierarchical Storage Management (HSM) on the file system.

19. (Original) The method as recited in claim 14, further comprising:

restoring the dynamic data, the candidate static data, and the metadata for the static copied data from a first-tier backup to the file system;

making the file system operational after said restoring from the first-tier backup;
and

restoring at least a portion of the static copied data from the second-tier backup media to the file system after said making the file system operational, wherein the restored metadata for the static copied data are used to locate the static copied data on the second-tier backup media.

20. (Currently amended) A computer-accessible storage medium comprising, program instructions, wherein the program instructions are computer-executable configured to implement:

determining static data in a file system, wherein static data are data in the file system that have not been modified for a specified period, wherein the static data includes static copied data for which a specified number of copies have been previously backed up to second-tier backup media and candidate static data for which less than a specified number of copies have been previously backed up to the second-tier backup media;

periodically or aperiodically backing up the candidate static data from [a] the file system to the second-tier backup media, ~~wherein the candidate static data are data that have not been modified for a specified period;~~

periodically or aperiodically backing up dynamic data and the candidate static data from the file system to first-tier backup media, wherein the dynamic data are data that have been created or modified in the specified period;
and

~~wherein only metadata for static copied data is backed up from the file system to the first tier backup media, wherein the static copied data are static data for which a specified number of copies have been previously backed up to the second tier backup media.~~

periodically or aperiodically backing up only metadata for the static copied data from the file system to the first-tier backup media.

21. (Currently amended) The computer-accessible storage medium as recited in claim 20, wherein the file system does not include infrastructure to support Hierarchical Storage Management (HSM).

22. (Currently amended) The computer-accessible storage medium as recited in claim 20, wherein the file system supports Hierarchical Storage Management (HSM) but HSM is not implemented on the file system.

23. (Currently amended) The computer-accessible storage medium as recited in claim 20, wherein the file system supports Hierarchical Storage Management (HSM) and HSM is implemented on the file system.

24. (Currently amended) The computer-accessible storage medium as recited in claim 20, wherein the two-tier backup mechanism is integrated with Hierarchical Storage Management (HSM) on the file system.

25. (Currently amended) The computer-accessible storage medium as recited in claim 20, wherein the program instructions are further configured to implement:

restoring the dynamic data, the candidate static data, and the metadata for the static copied data from a first-tier backup to the file system;

making the file system operational after said restoring from the first-tier backup;
and

restoring at least a portion of the static copied data from the second-tier backup media to the file system after said making the file system operational, wherein the restored metadata for the static copied data are used to locate the static copied data on the second-tier backup media.

26. (Original) A system, comprising:

a processor; and

a memory comprising program instructions, wherein the program instructions are executable by the processor to implement a two-tier backup mechanism configured to:

perform one or more second-tier backups to back up candidate static files from a file system to second-tier backup media, wherein the candidate static files are files that have not been modified for a specified period;

perform a first-tier backup, wherein, in the first-tier backup, the two-tier backup mechanism is configured to, for each file on the file system:

determine if the file is a dynamic file or a static file, wherein dynamic files are files that have been created or modified in the specified period and static files are files that have not been created or modified in the specified period;

if the file is a dynamic file, copy the dynamic file to first-tier backup media;

if the file is a static file, determine if the static file is a candidate static file or a static copied file according to a specified number of copies of the static file on the second-tier backup media;

if the file is a candidate static file, copy the candidate static file to the first-tier backup media; and

if the file is a static copied file, copy only metadata associated with the static copied file to the first-tier backup media.

27. (Original) The system as recited in claim 26, wherein Hierarchical Storage Management (HSM) is not implemented on the file system.

28. (Original) A method, comprising:

performing one or more second-tier backups to back up candidate static files from a file system to second-tier backup media, wherein the candidate static files are files that have not been modified for a specified period;

performing a first-tier backup, wherein said performing a first-tier backup comprises, for each file on the file system:

determining if the file is a dynamic file or a static file according to the specified period, wherein dynamic files are files that have been created or modified in the specified period and static files are files that have not been created or modified in the specified period;

if the file is a dynamic file, copying the dynamic file to first-tier backup media;

if the file is a static file, determining if the static file is a candidate static file or a static copied file according to a specified number of copies of the static file on the second-tier backup media;

if the file is a candidate static file, copying the candidate static file to the first-tier backup media; and

if the file is a static copied file, copying only metadata associated with the static copied file to the first-tier backup media.

29. (Original) The method as recited in claim 28, wherein Hierarchical Storage Management (HSM) is not implemented on the file system.

30. (Currently amended) A computer-accessible storage medium comprising, program instructions, wherein the program instructions are computer-executable ~~configured~~ to implement:

performing one or more second-tier backups to back up candidate static files from a file system to second-tier backup media, wherein the candidate static files are files that have not been modified for a specified period;

performing a first-tier backup, wherein said performing a first-tier backup comprises, for each file on the file system:

determining if the file is a dynamic file or a static file, wherein dynamic files are files that have been created or modified in the specified period and static files are files that have not been created or modified in the specified period;

if the file is a dynamic file, copying the dynamic file to first-tier backup media;

if the file is a static file, determining if the static file is a candidate static file or a static copied file according to a specified number of copies of the static file on the second-tier backup media;

if the file is a candidate static file, copying the candidate static file to the first-tier backup media; and

if the file is a static copied file, copying only metadata associated with the static copied file to the first-tier backup media.

31. (Currently amended) The computer-accessible storage medium as recited in claim 30, wherein Hierarchical Storage Management (HSM) is not implemented on the file system.